AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1-55. Cancelled.

56. (New) A magnetic resonance imaging (MRI) system providing an MR image of an imaging region of an object, said system comprising,

an MT (magnetization transfer) pulse applying unit configured to non selectively in space apply an MT pulse to the object so as to cause an MT effect in the imaging region, the MT pulse consisting of a plurality of divided MT pulses applied sequentially in time, a flip angle of each divided MT pulse being 90 to 100 degrees, and a region to be exited by the MT pulse spatially including the imaging region;

a grading spoiler pulse applying unit configured to apply a gradient spoiler pulse to the object after applying the MT pulse;

a scanning unit configured to scan the imaging region with a pulse sequence to acquire an MR signal from the imaging region after applying the gradient spoiler pulse; and

an image producing unit configured to produce the MR image using the acquired MR signal.

57. (New) The MRI system of claim 56, wherein each of the plurality of divided MT pulses applied by the MT pulse applying unit is composed of an RF pulse of which frequency is set to a value exciting magnetic spins residing in the imaging region.

58. (New) The MRI system of claim 57, wherein each of the plurality of divided MT pulses applied by the MT pulse applying unit is shorter in duration than a conventional slice-selective MT pulse.

59. (New) The MRI system of claim 56, wherein the gradient spoiler pulse applying unit is configured to apply to the object the gradient spoiler pulse in at least one of slice, readout and phase-encoding directions spatially set to the object, the slice, readout and phase-encoding directions being perpendicular to each other.

60. (New) A magnetic resonance imaging (MRI) system providing an MR image of an imaging region of an object, said system comprising:

a pulse sequence performing unit configured to perform a pulse sequence including a pre-sequence and an SE (spin echo)-system data acquisition sequence applied after the pre-sequence, the pre-sequence being formed for applying an MT (magnetization transfer) pulse to the object so as to cause MT effects in magnetic spins residing in the imaging region, the MT pulse consisting of a plurality of divided MT pulses applied sequentially in time, a flip angle of each divided MT pulse being 90 to 100 degrees, a region to be exited by the MT pulse spatially including the imaging region, and

the SE-system data acquisition sequence being formed for generating a plurality of echo signals in response to one time of RF (radio frequency) excitation of the spins in the imaging region;

an echo signal acquiring unit configured to acquire the plurality of echo signals; and

an image producing unit configured to produce the MR image based on the acquired echo signals.

61. (New) The MRI system of claim 60, wherein the pulse sequence is applied by the pulse sequence performing unit to either one of a three-dimensional volume region or a two-dimensional slab and formed to perform at least one time of excitation within a period of imaging repetition time, either one of the three-dimensional volume region or the two-dimensional slab being the imaging region.

62. (New) The MRI system of claim 61, wherein at least one factor among the number of divided MT pulses, the flip angle assigned to each divided MT pulse, and an off-resonance frequency assigned to each divided MT pulse is changeable.

63. (New) The MRI system of claim 62, wherein the pulse sequence includes a train of pulses formed according to one of a two-dimensional scan and a three-dimensional scan, said pulse sequence being formed based on one of SE (Spin Echo),

FSE (Fast SE), FASE (Fast Asymmetric SE), FE (Gradient Field Echo), FFE (Fast FE), segmented FFE, and EPI (Echo Planar Imaging) methods.

64. (New) A magnetic resonance imaging method of providing an MR (magnetic resonance) image of an imaging region of an object, the method comprising the steps of:

applying non-selectively in space an MT (magnetization transfer) pulse to the object so as to cause an MT effect in the imaging region, the MT pulse consisting of a plurality of divided MT pulses applied sequentially in time, a flip angle of each divided MT pulse being 90 to 100 degrees, and a region to be exited by the MT pulse spatially including the imaging region;

applying a gradient spoiler pulse to the object after applying the MT pulse;

scanning the imaging region with a pulse sequence to acquire an MR signal from the imaging region after applying the gradient spoiler pulse; and

producing the MR image using the acquired MR signal.

65. (New) The magnetic resonance imaging method of claim 64, wherein each of the plurality of divided MT pulses is composed of an RF pulse of which frequency is set to a value exciting magnetic spins residing in the imaging region.

66. (New) The magnetic resonance imaging method of claim 65, wherein each of the plurality of divided MT pulses is shorter in duration than a conventional slice-selective MT pulse.

67. (New) The magnetic resonance imaging method of claim 66, wherein the gradient spoiler pulse is applied in at least one of slice, readout and phase-encoding directions spatially set to the object, the slice, readout and phase-encoding directions being perpendicular to each other.